

PA_c=the side shell area in square meters based on projected molded dimensions for each segregated ballast tank, void, or other space that does not carry cargo and which complies with paragraph 2(b) of this appendix;

PA_s=the bottom shell area in square meters based on projected molded dimensions for each segregated ballast tank, void, or other space that does not carry cargo and which complies with paragraph 2(b) of this appendix;

L_r=the length in meters between the forward and after extremities of the cargo tanks;

B=the maximum breadth of the ship in meters measured amidship to the molded line of the frame; and

D=the molded depth in meters measured vertically from the top of the keel plate to the top of the freeboard deck beam at the side amidships. In tank vessels having rounded gunwales, the molded depth is measured from the top of the keel plate to the point of intersection of the molded lines of the deck and side shell plating, the lines being extended as though the gunwale were of angular design.

(a) *Method of determining a value for J.*

(1) For tank vessels for 20,000 DWT, J=0.45.
(2) For tank vessels of 200,000 DWT or more:

- (i) J=0.30; or
- (ii) J=the greater of 0.20, or

$$0.30 - \left[a - \frac{(O_c + O_s)}{40 A} \right],$$

where:

a=0.25 for tank vessels of 200,000 DWT.

a=0.40 for tank vessels of 300,000 DWT.

a=0.50 for tank vessels of 420,000 DWT.

For values of DWT between 200,000 and 300,000 DWT, 300,000 and 420,000 DWT, and greater than 420,000 DWT, the value of "a" is determined by linear interpolation.

O_c = as calculated in Appendix A of this part.

O_s = as calculated in Appendix A of this part.

O_A = the allowable oil outflow meeting § 157.19(b)(1) of this part.

(3) For values of DWT between 20,000 and 200,000 DWT, the value of "J" is determined by linear interpolation between 0.45 and 0.30 respectively.

(b) PA_c and PA_s: *Criteria for determining the segregated ballast tanks, voids, and other spaces that do not carry cargo.*

The following criteria are to be met for a segregated ballast tank, void, or space that does not carry cargo, to be used in determining PA_c and PA_s:

(1) The minimum width of each wing tank or space, either of which extends for the full depth of the vessel's side or from the main deck to the top of the double bottoms is 2

meters or more. The width is measured in-board from the vessel's side shell plating at right angles to the vessel's center line. If a wing tank or space has a width anywhere within it that is less than 2 meters, that wing tank or space is not used when calculating PA_c.

(2) The minimum vertical depth of each double bottom tank or space is B/15 or 2 meters, whichever is smaller. If a double bottom tank or space has a depth less than B/15 or 2 meters, whichever is smaller, anywhere within it, the double bottom or space is not to be used when calculating PA_s.

(3) The minimum width of a wing tank or space is not measured in the way of—

- (i) the turn of the bilge area; or
- (ii) a rounded gunwale area.

(4) The minimum depth of a double bottom tank or space is not measured in the way of the turn of the bilge area.

[CGD 77-058b, 45 FR 43716, June 30, 1980, as amended by USCG-2008-0179, 73 FR 35015, June 19, 2008]

APPENDIX D TO PART 157—EXAMPLE OF A PROCEDURE FOR DEDICATED CLEAN BALLAST TANKS OPERATIONS

1. *Source.* The example procedure for dedicated clean ballast tanks operation contained in this appendix conforms to the Annex of Resolution 14 of the MARPOL Protocol.

2. *Example Procedure.* Dedicated clean ballast tanks operational procedure:

(a) Before arrival at the loading port:

(1) Transfer all remaining oily mixtures to a cargo tank.

(2) Ensure that the pumping and piping designated for clean ballast operation have been properly cleaned to accommodate simultaneous discharge of clean ballast while loading.

(3) Ensure that all valves to the slop tank and the cargo tanks are closed.

(4) Perform visual inspection of all dedicated clean ballast tanks and their contents, if any, for signs of contamination.

(5) Discharge a sufficient amount of clean ballast water to ensure that remaining ballast water and cargo to be loaded will not exceed the permissible deadweight or draft. Leave a sufficient amount of water for flushing the piping, and as a minimum, a quantity equal to 10 times the volume of the affected piping.

(6) Ensure that all valves to the dedicated clean ballast tanks are closed.

(7) If no further ballast discharge is anticipated, drain the clean ballast piping.

(b) In the loading port:

(1) Perform normal loading operations of cargo tanks.

(2) Ensure sufficient slop tank capacity is available for subsequent reception of cargo pump and piping flushings.

(3) When applicable, discharge remaining clean ballast before entire piping system is used for loading. Leave the required minimum quantity of flushing water in ballast tanks.

(4) Ensure that all valves to the dedicated clean ballast tanks are closed.

(5) Ensure that all valves to the cargo tank are closed upon completion of loading.

(c) After departure from the loading port:

(1) Flush appropriate pumping and piping with sufficient water from dedicated clean ballast tanks into a slop tank.

(2) Ensure that valves to the slop tank are closed before pumping the remaining clean water overboard and monitoring oil content of the water.

(3) Ensure that all valves in the dedicated clean ballast tanks are closed.

(d) Before arrival at the unloading port:

(1) Ensure that all valves to the slop tank and cargo tanks are closed.

(2) Recheck that the pumping and piping designated for clean ballast operation have been properly cleaned.

(3) Ballast through clean cargo pumps and piping, considering the port's draft requirements.

(4) Ensure that all valves in the dedicated clean ballast tanks are closed.

(e) In the unloading port:

(1) Allocate pumping and piping intended for clean ballast operation.

(2) Perform normal unloading operations.

(3) As soon as draft conditions permit, complete ballasting to departure conditions.

(4) Ensure that all valves to the dedicated clean ballast tanks are closed.

(5) Complete unloading.

(f) After departure from the unloading port:

(1) Flush pumps and piping servicing the dedicated clean ballast tanks into the slop tank.

(2) Top up dedicated clean ballast tanks.

(3) Process the slop tank content in accordance with load on top (LOT) procedures.

[CGD 77-058b, 45 FR 43717, June 30, 1980, as amended by USCG-2000-7641, 66 FR 55573, Nov. 2, 2001]

APPENDIX E TO PART 157—SPECIFICATIONS FOR THE DESIGN, INSTALLATION AND OPERATION OF A PART FLOW SYSTEM FOR CONTROL OF OVERBOARD DISCHARGES

Source. Appendix 2 to Annex 5 of IMO's Marine Environment Protection Committee document MEPC/Circ. 97. Paragraphs 1 and 2 are printed for information. Paragraphs 3, 4, and 5 are incorporated into §§157.11 and 157.37.

Note: Information in square brackets on Figure 1 has been added by the Coast Guard for clarity.

1 Purpose

The purpose of these Specifications is to provide specific design criteria and installation and operational requirements for the part flow system referred to in Regulation 18(6)(e) of Annex I of the International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978 relating thereto.

2 Application

2.1 Existing oil tankers may, in accordance with Regulation 18(6)(e) of Annex I of MARPOL 73/78, discharge dirty ballast water and oil contaminated water from cargo tank areas below the waterline, provided part of the flow is led through permanent piping to a readily accessible location on the upper deck or above where it may be visually observed during the discharge operation and provided that the arrangements comply with the requirements established by the Administration and which shall at least contain all the provisions of these Specifications.

2.2 The part flow concept is based on the principle that the observation of a representative part flow of the overboard effluent is equivalent to observing the entire effluent stream. These specifications provide the details of the design installation, and operation of a part flow system.

3 General Provisions

3.1 The part flow system shall be so fitted that it can effectively provide a representative sample of the overboard effluent for visual display under all normal operating conditions.

3.2 The part flow system is in many respects similar to the sampling system for an oil discharge monitoring and control system but shall have pumping and piping arrangements separate from such a system, or combined equivalent arrangements acceptable to the Administration.

3.3 The display of the part flow shall be arranged in a sheltered and readily accessible location on the upper deck or above, approved by the Administration (e.g. the entrance to the pump room). Regard should be given to effective communication between the location of the part flow display and the discharge control position.

3.4 Samples shall be taken from relevant sections of the overboard discharge piping and be passed to the display arrangement through a permanent piping system.

3.5 The part flow system shall include the following components:

- .1 Sampling probes;
- .2 Sample water piping system;
- .3 Sample feed pump(s);